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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/044,713	01/12/2002	Vinh N. Le	180577-00160	1264

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EXAMINER	
DOROSHENK, ALEXA A	
ART UNIT	**PAPER NUMBER**
1764	

DATE MAILED: 03/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/044,713	LE, VINH N.	
	Examiner	Art Unit	
	Alexa A. Doroshenk	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 February 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *6/4/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. Claim 1 is objected to because of the following informalities: in line 3 of the claim, it is believed that the recitations of "sheet tube" should be "tube sheet". Appropriate correction is required.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the fins are heat pipes which have liquid heat transfer fluid within and are corrugated (claims 16-18) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 9 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 8 recites the limitation "said thermosyphon heat pipe" in line 1 of the claim. There is insufficient antecedent basis for this limitation in the claim. Neither claim 1 nor claim 2 recite a “thermosyphon”.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Le Diouron (4,538,423).

With respect to claim 1, Le Diouron discloses and apparatus comprising:

a reactor shell (1) having an inlet end tube sheet (17) and an outlet end tube sheet (3);

the shell having an internal reaction zone (not numbered, see figure 2) between the tube sheets (3 and 17);

at least one thermally conductive heat pipe (2) extending between the sheets (3 and 17) and the pipe extending through one of the tube sheets (see figures 2 and 4);

the reactor (1) having an inlet (4) and outlet (5) from the reaction zone;

a plurality of thermally conductive extended heat transfer surfaces (13) mounted to the heat pipe (2) for receiving the heat of the reactants and conveying it to the heat pipe and the surfaces forming channels for the flow of reactants in the zone (col. 2, lines 35-40); and

the heat pipe (2) having an evaporation section within the reaction zone (col. 5, lines 10-15) and containing a liquid heat transfer fluid (col. 2, lines 19-22).

With respect to claim 2, Le Diouron further discloses wherein the heat pipe (2) is a sealed heat pip (col. 2, lines 7-11) and the end which extends (7) through the tube sheet (3) is a condenser (col. 5, lines 10-15).

7. Claims 1 and 3 are rejected under 35 U.S.C. 102(b) as being anticipated by Grunes et al. (4,393,663).

With respect to claim 1, Grunes et al. discloses and apparatus comprising:

a reactor shell (17) having an inlet end tube sheet (32) and an outlet end tube sheet (36);

the shell having an internal reaction zone (16) between the tube sheets (32 and 36);

at least one thermally conductive heat pipe (41) extending between the sheets (32 and 36) and the pipe extending through one of the tube sheets (see figure 3, via 34);

the reactor (17), in order to be operational, inherently has an inlet and outlet from the reaction zone;

a plurality of thermally conductive extended heat transfer surfaces (41) mounted to the heat pipe (41) for receiving the heat of the reactants and conveying it to the heat pipe and the surfaces forming channels for the flow of reactants in the zone (see figure 3); and

the heat pipe (41) having an evaporation section (112) within the reaction zone (17) and containing a liquid heat transfer fluid (col. 5, lines 16-18).

With respect to claim 3, Grunes et al. further discloses wherein the heat pipe (41) is a thermosyphon heat pipe (col. 1, lines 6-8) which had a first end (18) which extends through the outlet tube sheet (36) and a second end (24) which extends through the inlet tube sheet (32), and the first (18) and second (24) ends are in fluid communication with a heat exchanger (14).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 10, 11, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Le Diouron (4,538,423), as applied to claims 1 and 2 above, and further in view of Seshimo et al. (5,009,263).

While Le Diouron discloses all of the structure as discussed above, Le Diouron fails to disclose any particular fin shape or design in the apparatus.

Seshimo et al. teaches heat transfer fins (1) with improved heat transmission characteristics (col. 1, lines 6-9) for use with a heat pipe (col. 1, lines 34-37) wherein their fins have corrugations (figure 14 and col. 5, lines 38-52) and through-holes (13). It would have been obvious to one of ordinary skill in the art at the time the invention was made to select the specific fin taught by Seshimo et al. for the fins in the apparatus of Le Diouron in order to achieve improved heat transmission.

10. Claims 12 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Le Grunes et al. (4,393,663), as applied to claims 1 and 3 above, and further in view of Seshimo et al. (5,009,263).

While Grunes et al. disclose all of the structure as discussed above, Grunes et al. fail to disclose any particular fin shape or design in the apparatus.

Seshimo et al. teaches heat transfer fins (1) with improved heat transmission characteristics (col. 1, lines 6-9) for use with a heat pipe (col. 1, lines 34-37) wherein their fins have corrugations (figure 14 and col. 5, lines 38-52) and through-holes (13). It would have been obvious to one of ordinary skill in the art at the time the invention was made to select the specific fin taught by Seshimo et al. for the fins in the apparatus of Grunes et al. in order to achieve improved heat transmission.

11. Claims 4, 5 and 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Le Diouron (4,538,423), as applied to claims 1 and 2 above, and further in view of Wisniewski et al. (6,196,296).

While Le Diouron discloses all of the structure as discussed above, including having fins, Le Diouron fails to disclose any particular fin shape or design in the apparatus.

Wisniewski et al. teach a heat exchange device with a central heating/cooling pipe (8) with fins (6) attached thereto (col. 3, lines 5-8) of any shape (col. 3, lines 55-57) and the fins contain heat transfer fluid (col. 2, lines 34-36). Wisniewski et al. teach that this arrangement enhances heat transfer as well as achieves more rapid heat transfer (col. 2, lines 36-55). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the fins having heat transfer fluid within them for the fins of Le Diouron in order to achieve enhanced heat transfer and more rapid heat transfer.

12. Claims 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Le Diouron (4,538,423) in view of Wisniewski et al. (6,196,296), as applied to claims 1, 2 , and 7-9 above, and further in view of Seshimo et al. (5,009,263).

While Le Diouron, as modified by Wisniewski et al., discloses all of the structure as discussed above While Wisniewski et al. discloses that the fins can be of any shape, fails to specifically disclose wherein the fins can be a corrugated shape.

Seshimo et al. teaches heat transfer fins (1) with improved heat transmission characteristics (col. 1, lines 6-9) for use with a heat pipe (col. 1, lines 34-37) wherein

their fins have have corrugations (figure 14 and col. 5, lines 38-52). It would have been obvious to one of ordinary skill in the art at the time the invention was provide through-holes as taught by Seshimo et al. in the fins in the modified apparatus of Le Diouron in order to achieve further improved heat transmission.

13. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grunes et al. (4,393,663), as applied to claims 1 and 3 above, and further in view of Wisniewski et al. (6,196,296).

While Grunes et al. disclose all of the structure as discussed above, including having fins, Grunes et al. fail to disclose any particular fin shape or design in the apparatus.

Wisniewski et al. teach a heat exchange device with a central heating/cooling pipe (8) with fins (6) attached thereto (col. 3, lines 5-8) of any shape (col. 3, lines 55-57) and the fins contain heat transfer fluid (col. 2, lines 34-36). Wisniewski et al. teach that this arrangement enhances heat transfer as well as achieves more rapid heat transfer (col. 2, lines 36-55). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the fins having heat transfer fluid within them for the fins of Grunes et al. in order to achieve enhanced heat transfer and more rapid heat transfer.

Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexa A. Doroshenk whose telephone number is 571-

272-1446. The examiner can normally be reached on Monday - Thursday from 9:00 AM - 7:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Alexa A. Doroshenk
Examiner
Art Unit 1764